materials may be made sensitive to specific genes or gene segments through complimentary genetic indicators that have been designed to fluoresce or change color, as observed by the naked eye or by spectrographic analysis methods, when they are linked to a molecule to which they have affinity. A large number of different types and combinations of optically readable probes are being manufactured today that have specific affinity to one or more genes, proteins or other chemicals. In preferred embodiments, the present invention contemplates the use of two classes of probes: (i) protein sensitive probes, such as GFP (green fluorescent probe) from the jellyfish *Aequorea victoria*; and (ii) modified oligonucleotide probes that are fluorogenic, such as those manufactured by Synthegen LLC, Houston, Texas 77042. Additional probes suited for use in the present invention are available from Midland Certified Reagent Company, Midland, Texas 79701, and Transbio Corp., Blatimore, Maryland 21220. Typically these probes must be used *in vitro* due to either their lack of biocompatability or because they must be used in conjunction with aggressive reagents that are toxic to cells.

In the Drawings:

Please substitute 7 sheets of informal drawings (Figures 1-6) with 7 sheets of ***formal*** drawings (same Figures 1-6).

In the Claims:

Please cancel claims 25 and 33-43, amend claims 1-3, 6-8, 11-16, 26-28, 31, and 32, and add new claims 44-88 to read as follows:

1. (Amended) A body-insertable apparatus comprising:

an excitation source capable of generating radiation;

at least one probe disposed in a path of said radiation, said probe situated to contact an analyte;

a detector for detecting optical properties of said probe, said detector also for converting optical signals representative of the detected optical properties to electrical signals;

and a housing adapted for reaching an area of interest within a body,

wherein said excitation source, said probe, and said detector are disposed in said housing.

93

2. (Amended) The apparatus of claim 1 wherein said probe binds to an oligonucleotide.

3. (Amended) The apparatus of claim 1 wherein said probe binds to a protein.

6. (Amended) The apparatus of claim 1 wherein said probe comprises an array of sub-probes.

7. (Amended) The apparatus of claim 6 wherein said array comprises a readable polydeoxynucleotide array.

8. (Amended) The apparatus of claim 6 wherein said array is disposed in a plurality of chambers within a frame.

11. (Amended) The apparatus of claim 1 further comprising optics that affects said path of radiation.

12. (Amended) The apparatus of claim 11 wherein said optics comprises a mirror.

13. (Amended) The apparatus of claim 12 wherein said mirror is adjustable.

14. (Amended) The apparatus of claim 1 wherein said body-insertable apparatus is electrically connected to a processing unit.

15. (Amended) The apparatus of claim 1 wherein said body-insertable apparatus is electrically connected to an amplifier.

16. (Amended) The apparatus of claim 1 wherein said body-insertable apparatus is electrically connected to a display.

26. (Amended) The apparatus of claim ~~1~~ wherein said body-insertable apparatus comprises a catheter.

27. (Amended) The apparatus of claim 1 wherein said body-insertable apparatus defines one or more lumens extending through the length of said body-insertable apparatus.

28. (Amended) The apparatus of claim 27 wherein said lumen delivers a drug, a reagent or a device to or beyond the distal tip of said body-insertable apparatus.

31. (Amended) The apparatus of claim 1 wherein said detector detects light emission at multiple wavelengths.

32. (Amended) The apparatus of claim 31 wherein said detector comprises a photodiode.

44. (New) A method of performing in vivo examination of a mammalian body, said method comprising:
(a) providing a device comprising an excitation source, at least one probe, a detector and a housing, wherein said excitation source, said probe and said detector are disposed in said housing;
(b) inserting said device into said mammalian body until said probe contacts an analyte in an area of interest;
(c) generating radiation from said excitation source such that said probe is in a path of said radiation;
(d) detecting an optical signal representative of an optical property of said probe through said detector; and
(e) converting said optical signal to an electrical signal.

45. (New) The method of claim 44 wherein said analyte comprises an oligonucleotide.

46. (New) The method of claim 44 wherein said analyte comprises a protein.

47. (New) The method of claim 44 wherein said probe is fluorescently labeled.

48. (New) The method of claim 44 wherein said probe is attached to a substrate.

49. (New) The method of claim 44 wherein said probe comprises an array of sub-probes.

50. (New) The method of claim 49 wherein said array comprises a readable polydeoxynucleotide array.

51. (New) The method of claim 49 wherein said array is disposed in a plurality of chambers within a frame.

52. (New) The method of claim 51 wherein said frame comprises a molded material.

53. (New) The method of claim 51 wherein said frame comprises a foraminous material.

54. (New) The method of claim 44 further comprising using optics to affect said path of radiation.

55. (New) The method of claim 54 wherein said step of using optics comprises adjusting a mirror.

56. (New) The method of claim 44 further comprising transmitting and processing said electrical signal.

57. (New) The method of claim 44 further comprising amplifying said electrical signal.

58. (New) The method of claim 44 further comprising displaying said electrical signal.

59. (New) The method of claim 48 further comprising mixing said probe with an ink to form a probe-filled ink and depositing said probe-filled ink upon said substrate.

60. (New) The method of claim 59 further comprising depositing a plurality of probe-filled inks upon said substrate in a specific ink pattern.

61. (New) The method of claim 60 further comprising protecting said ink pattern with a topcoat.

62. (New) The method of claim 61 wherein said topcoat comprises a dissolvable gel.

63. (New) The method of claim 61 wherein said topcoat comprises a polymer material dissolvable only upon application of a solvent.

64. (New) The method of claim 44 wherein said detector comprises a spectrometer module.

65. (New) The method of claim 44 further comprising encapsulating said spectrometer module in an at least partly transparent housing.

66. (New) The method of claim 44 wherein said excitation source comprises a light-emitting diode.

67. (New) The method of claim 44 wherein step (c) comprises generating radiation of wavelengths in a range from about 1100 nm to about 250 nm.

68. (New) The method of claim 44 wherein said detector comprises a photodiode responsive to said optical signal from said probe.

69. (New) The method of claim 44 wherein said detector comprises a light wavelength detection system.

70. (New) The method of claim 69 wherein said light wavelength detection system comprises a bandpass filter.

71. (New) The method of claim 44 wherein said device comprises a catheter.

72. (New) The method of claim 44 wherein said device defines at least one lumen extending through the length of said device.

73. (New) The method of claim 72 further comprising delivering a drug, a reagent or a device through said lumen to or beyond a distal tip of said device to affect said area of interest.

74. (New) The method of claim 72 further comprising using said lumen to provide suction such that said analyte is drawn into contact with said probe.

75. (New) The method of claim 44 further comprising introducing to said area of interest a lysing system to facilitate contact between said analyte and said probe.

76. (New) The method of claim 75 further comprising using ultrasonic energy to rupture a cell membrane at said area of interest.

77. (New) The method of claim 75 further comprising using a pressurization and evacuation system to rupture a cell membrane at said area of interest.

78. (New) The method of claim 75 further comprising using a mechanical force to rupture a cell membrane at said area of interest.

79. (New) The method of claim 78 further comprising using a lysing head driven by a driveshaft to rupture said cell membrane.

80. (New) The method of claim 44 further comprising implanting said device in said mammalian body.

81. (New) The method of claim 44 further comprising anchoring said device in said area of interest through an anchor.

82. (New) The method of claim 81 wherein said anchor comprises a therapeutic tip for administering a therapeutic agent.